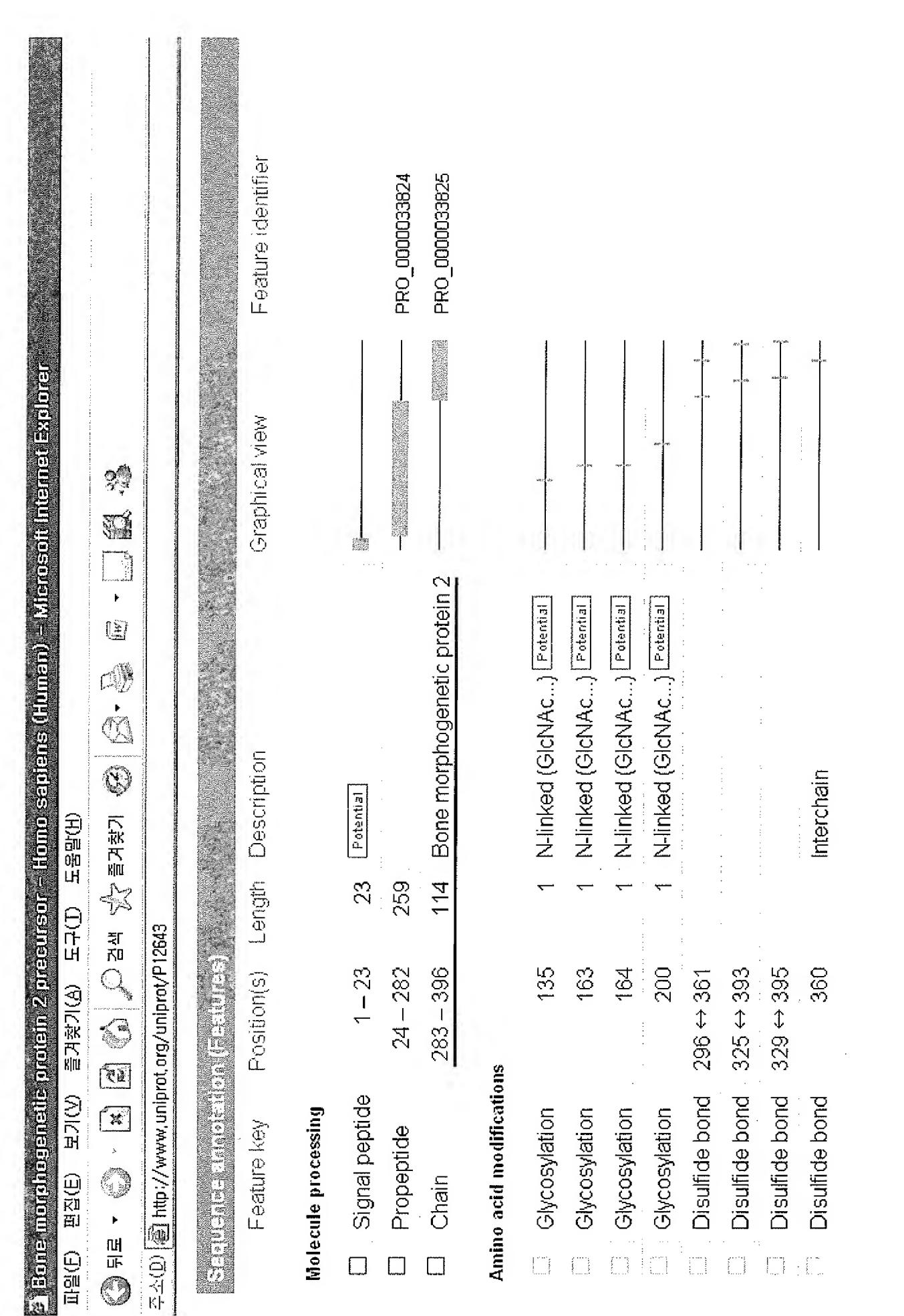


net Explorer		→BMP-2 sequence (283~396)	→ 1~282 : Signal peptide + Propeptide	→SEQ ID No:3 of the present invention: 2-18 of the above BMP-2 (red underline): 17 amino acids	→SEQ ID No:6 of the present invention: 24-40 of the above BMP-2(pink	underline): 17 amino acids		invention: 355-374 of BMP-2 precusor (green underline)		 SEQ ID No: 12 of the present invention: 370-390 of BMP-2 precusor (yellow underline) 	
mo septens (Humen) – Misosofi Inten		Length Mass (Da) Tools	STA 396 44,702 Blast		4 <u>0</u> 5 <u>0</u> RKFAAASSGR PSSQPSDEVL SEFELRLLSM	10 <u>0</u> GSPAPDHRLE RAASRANTVR SFHHEESLEE	16 <u>0</u> QVFREQMODA LGNNSSFHHR INIYEIIKPA	22 <u>0</u> 23 <u>0</u> 24 <u>0</u> PAVMRUTAQG HANHGFVVEV AHLEEKQGVS	28 <u>0</u> 29 <u>0</u> 30 <u>0</u> GKGHPLHKRE KROAKHKORK RLKSSCKRHP	34 <u>0</u> 35 <u>0</u> 36 <u>0</u> FPLADHLNST NHAIVQTLVN SVNSKIPKAC	EGCGCR
P Bons more inegenetic protein Z preduces $=$ Home $\overline{\Pi}$	② FI로 - ③ · [조] [조] · ○ 검색 것는 즐겨찾기 주소(D) [중] http://www.uniprot.gra/uniprot/P12643	Sequence	Ö	Last modified October 1, 1989. Version 1. Checksum: 20653A3987B25E60	10 20 30 MVAGTRCLLA LLLPQVLLGG AAGLVPELGR R	70 80 90 FGLKQRPTPS RDAWVPPYML DLYRRHSGQP G	13 <u>0</u> 14 <u>0</u> LPETSGKTTR RFFFNLSSIP TEEFITSAEL O	19 <u>0</u> 20 <u>0</u> 21 <u>0</u> TANSKFPVTR LLDTRLVNON ASRWESFDVT P	25 <u>0</u> 26 <u>0</u> 27 <u>0</u> KRHVRISRSL HODEHSWSOI RPLLVTFGHD G	310 320 LYVDFSDVGU NDUIVAPPGY HAFYCHGECP F	37 <u>0</u> 38 <u>0</u> 39 <u>0</u> CVPTELSAIS MLVLDENEKV VLKNYODMVVE





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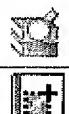






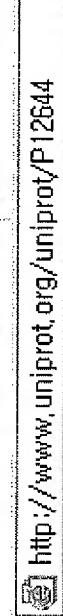
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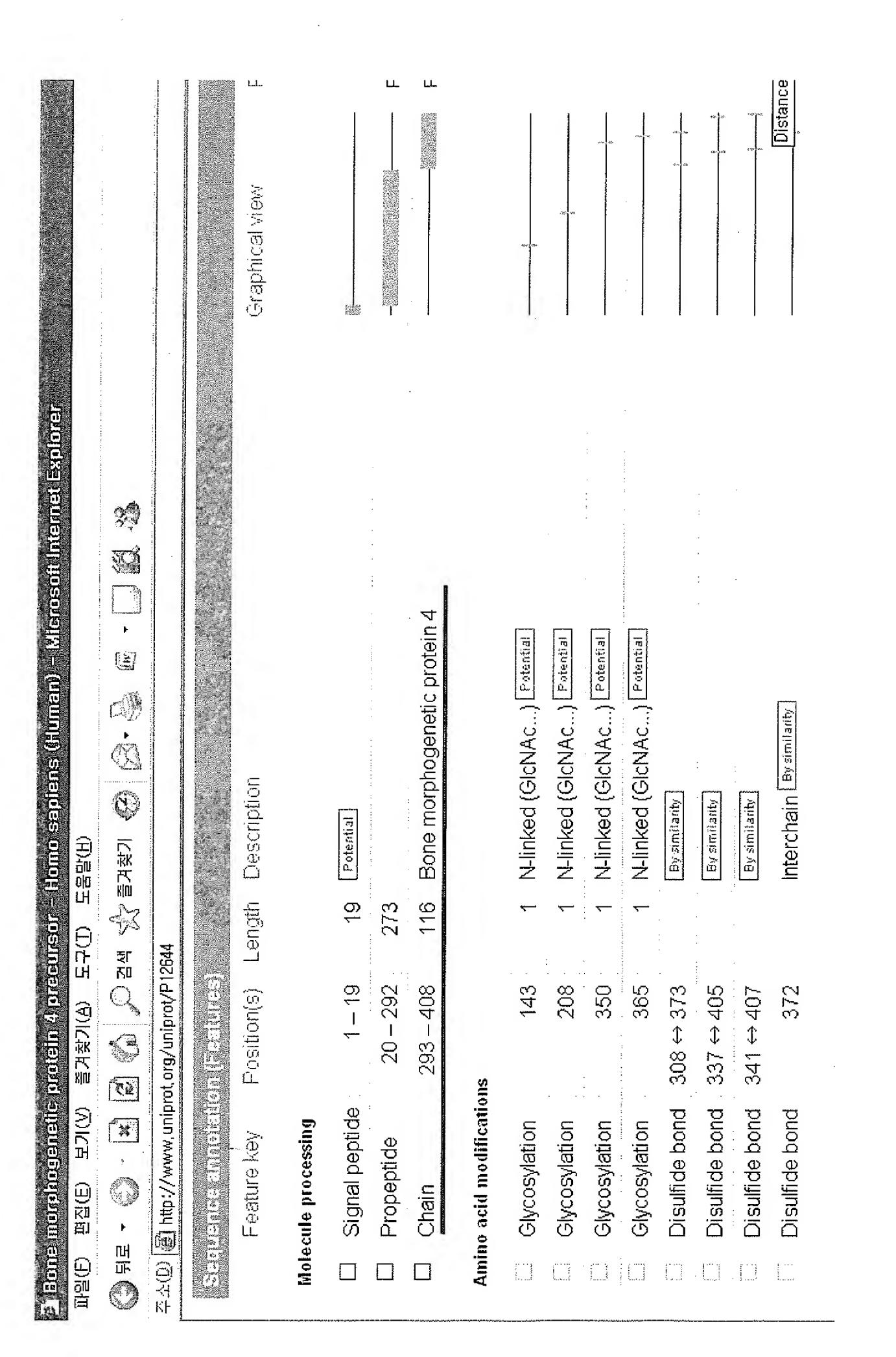
→BMP-4 sequence (293~408).

→1~292 : Signal peptide + Propeptide

→ SEQ ID No: 4 of the present invention: 2-18 of the above BMP-4 (red underline): 17 amino acids

SEQ ID No: 14 of the present invention: 293-313 of BMP- 4 precusor (violet underline) SEQ ID No: 15 of the present invention: 366-386 of BMP-4 precusor (green underline)

 SEQ ID No: 16 of the present invention: 382-402 of BMP-4 precusor (yellow underline)





2-18 of the above BMP-6 (red underline): → SEQ ID No: 5 of the present invention: SEQ ID No: 19 of the present invention: SEQ ID No: 20 of the present invention: SEQ ID No: 18 of the present invention: → 1~374: Signal peptide + Propeptide 487-510 of BMP-6 precusor (yellow 397-418 of BMP- 6 precusor (violet 472-490 of BMP-6 precusor (green →BMP-6 sequence (375~513) 17 amino acids Meresoft Internat हिस्तुलिस underline) underline) underline))) 300 3 60 420 6<u>0</u> GRTEOPPRSP 18<u>0</u> RROPPPGALH 12<u>0</u> EEQQQQQQLP 24<u>0</u> RORHHKEFKF FLLDTRVVWA GPYDKOPFIV ACRKHELYVS 480 EYVPKPCCAP Blast Tools 17<u>0</u> UPHEAASSSQ 230 LVEYDKEFSP 290 OEHOHRDSDL OPQPPALROQ 350 PRAAGLVGRD 410 47<u>0</u> VOTLVHLMNP GQLLGDGGSP 110 SDYNSSELKT Mass (Da) 57,226 F Length 513 28<u>0</u> TFLISIYQVL 22<u>0</u> DADMVMSFVN **4**. □| AAAAG 16<u>0</u> Gasegeroos 340 VVTRDGVHVH 460 AHMAATMHAI HRPRPLHGLO 400 SODVARVSSA ें। डिल्हा मध्यम्भेतवद्यायिक विक्ताति है। व्रत्यसाह्य का निर्माण हु LPAAA FASTA 出 い む の 出 即
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明 五命四(川) TSACDSAFLN 140 SAPLFMLDLY NALSADNDED 27<u>0</u> DCVMGSFKNQ 9<u>0</u> KEILSVLGLP Ol က CCGPPPLRPP 2 10 330 POHNMGLQLS 390 ROOSRNRSTO 450 CDGECSFPLN 510 KYRNMWVRAC 五子(丁) Last modified August 1, 1991. Version 1. ₹ R C 주소(D) | 圖 http://www.uniprot.org/uniprot/P22004 44<u>0</u> IAPKGYAANY OSSSGFLYRR LKTOEKRENG Checksum: 3F19155B36049278 26<u>0</u> VTAAEFRIYK 20 LCWUMGLLCS GEGEGGASPL 200 0| 88 80 TATSMLUVVT 38<u>0</u> RTTRSASSRR 500 FDDNSNVILK 즐거찾기(심) P22004-1 [UniParc] gy. MPGLGRRAQU 130 RGEPPPGRLK PLNRKSLLAP NLSCIPEGEV TKLNAISVLY 보기(상) 190 250 37<u>0</u> AFFKVSEVHV 490 430 0 310 SEEGULEFDI FODLGWODWI 1 Sequence **吧** 囚(E) þ 내내 山島(日)

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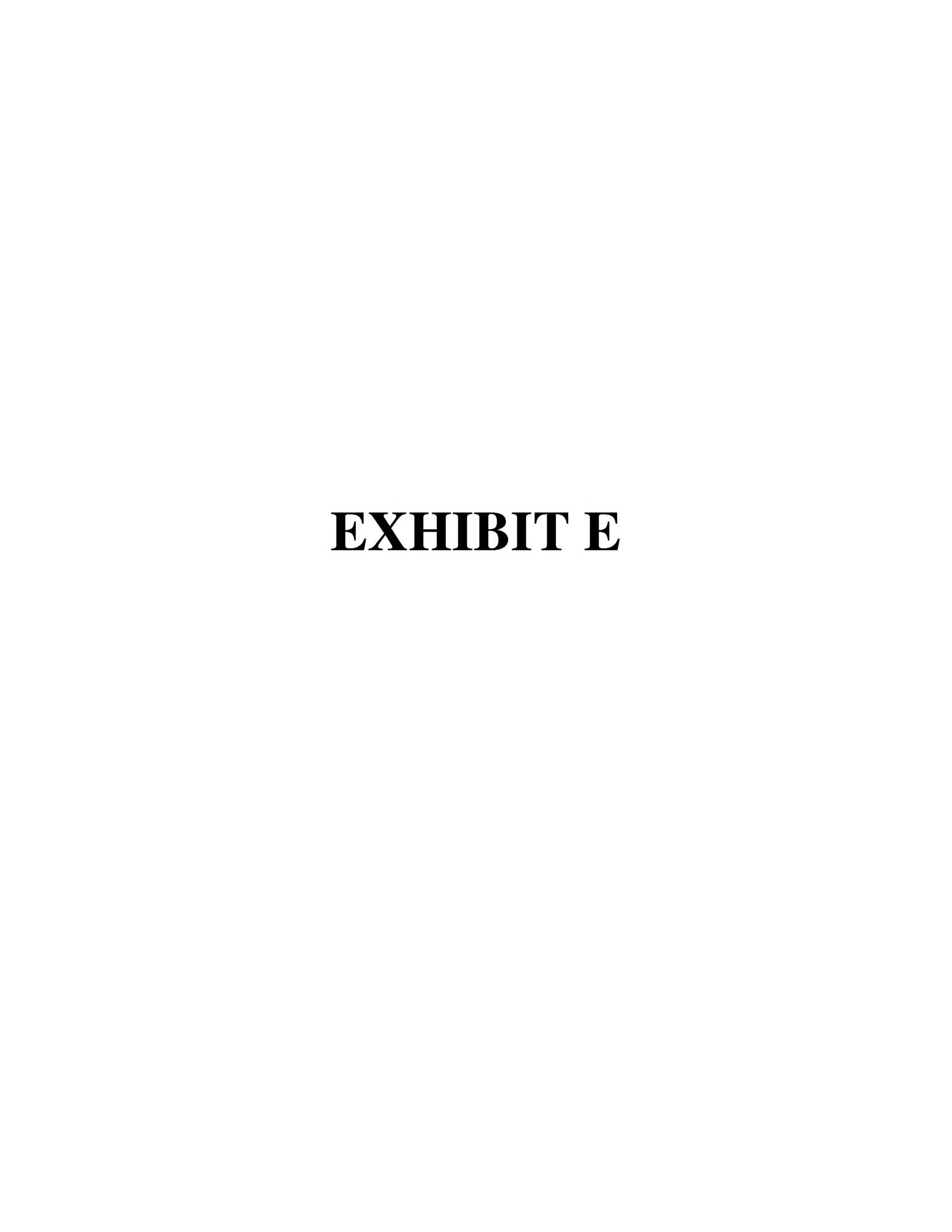


No: 23 of the present invention (390-409 of 405-423 of BMP-7 precusor (red underline) → SEQ ID No: 21 of the present invention: (The above sequence is equal to SEQ ID SEQ ID No: 24 of the present invention: •SEQ ID No: 22 of the present invention: → 1~292: Signal peptide + Propeptide 320-340 of BMP-7 precusor (violet 98-117 of BMP-7 (pink underline) →BMP-7 sequence (293~431) BMP-7 precusor.) underline) as (Glumend) — Mietasoff Internet Explorer 05 6<u>0</u> RREMOREILS 240 120180 300 420 FSTOGPPLAS AAEFRIYKDY TSNHUVVNPR INSTESKORS 36<u>0</u> Pegyaayyce DSSNVILKKY Blast Tools 5<u>0</u> FIHRRLRSQE Mass (Da) 230 EGWLVFDITA 49,313 29<u>0</u> FKATEVHFRS DLGWQDWIIA OGFSYPYKAV SKIPEGEAUT 410 110 350 170 LNAISVLYFD Length 431 34<u>0</u> KKHELYVSFR 100 AVEEGGGPGG 28<u>0</u> ONKOPFMVAF 16<u>0</u> YHHREFRFDL 40 01 88 22<u>0</u> (ASE 400 TLVHFINPET VPKPCCAPTO 30 LFLLRSALAD FSLDNEVHS LDSRTLWAS ि विधा ३ माधतवीर शुभासीर गितासीर ग्रिस मित्रा स्था स्था स्था न प्रामाण स्थाप S FASTA 丘哈里(比) 八字 雪子茶刀 平소(D) |劉 http://www.uniprot.org/uniprot/P19075&format=html 90 MFMLDLYNAM 27<u>0</u> LAGLIGRHGP 210 HLGRESDLFL 320 EALRMANVAE NSSSDOROAC EHDKEFFHPR 150 390 Last modified November 1, 1990. Version 1 Checksum: 47AD5E45C6815F8A (工)七玉 90 HLQGKHNSAP 10 20 MHVRSLRAAA PHSFVALWAP MNATWHAIVO RISVYQVLQE 260 TLDGQSINPK DMVMSFVNLV $20\underline{0}$ 140 380 즐거찾기(4) P18075-1 [UniParc] **T** 江 250 HNLGLQLSVE ONRSKTPKNO LODSHFLTDA ILGLPHRPRP IRERFDNETF GECAFPLNSY 五元 190 370130 310 430 RNMVVRACGC × Sequence 旧公(円) þ 当出〇

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Partial translation for KR 10-2004-0019010

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[Disclosure of invention]

<15> To achieve the above object, the present invention provides a barrier membrane and a implant which have a cell adhesion-inducing peptide and/or tissue growth factor-derived peptide immobilized on the surface of the membrane or the implant bonded with a cross-linking agent.

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<19> Specifically, the cell adhesion-inducing peptide is preferably a peptide having an amino acid sequence of SED ID NO: 1. More preferably, it is an amino acid sequence of SEQ ID NO: 2 or an amino acid sequence of SEQ ID NO: 3 designed to maintain the structural stability of the amino acid sequence of SEQ ID NO: 1, RGD. Furthermore, the tissue growth factor-derived peptide is a peptide identified and chemically synthesized from the active site of the tissue growth factor. Preferably it is at least one peptide selected from the group consisting of the following peptides:

<20> (a) the amino acid sequence at positions 283-302 (SEQ ID NO: 4), the amino acid sequence at positions 335-353 (SEQ ID NO: 5) and the amino acid sequence at positions 370-390 (SEQ ID NO: 6) of bone morphogenetic proteins (BMP)-2;

<21> the amino acid sequence at positions 293-313 (SEQ ID NO: 7), the amino acid sequence at positions 360-379 (SEQ ID NO: 8) and the amino acid sequence at positions 382-402 (SEQ ID NO: 9) of BMP-4;

<22> the amino acid sequence at positions 397-418 (SEQ ID NO: 10), the amino

acid sequence at positions 472-490 (SEQ ID NO: 11) and the amino acid sequence at positions 487-510 (SEQ ID NO: 12) of BMP-6;

<23> the amino acid sequence at positions 320-340 (SEQ ID NO: 13), the amino acid sequence at positions 390-409 (SEQ ID NO: 14) and the amino acid sequence at positions 405-423 (SEQ ID NO: 15) of BMP-7;

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<24> (b) the amino acid sequence at positions 199-204 (SEQ ID NO: 16), the amino acid sequence at positions 151-158 (SEQ ID NO: 17), the amino acid sequence at positions 275-291 (SEQ ID NO: 18), the amino acid sequence at positions 20-28 (SEQ ID NO: 19), the amino acid sequence at positions 65-90 (SEQ ID NO: 20), the amino acid sequence at positions 150-170 (SEQ ID NO: 21) and the amino acid sequence at positions 280-290 (SEQ ID NO: 22) of bone sialoprotein,

<25> (c) the amino acid sequence at positions 242-250 (SEQ ID NO: 23), the amino acid sequence at positions 279-299 (SEQ ID NO: 24) and the amino acid sequence at positions 343-361 (SEQ ID NO: 25) of a transforming growth factor beta 1,

<26> (d) the amino acid sequence at positions 100-120 (SEQ ID NO: 26) and the amino acid sequence at positions 121-140 (SEQ ID NO: 27) of a platelet-derived growth factor,

<27> (e) the amino acid sequence at positions 23-31 (SEQ ID NO: 28) and the amino acid sequence at positions 97-105 (SEQ ID NO: 29) of an acidic fibroblast growth factor,

<28> (f) the amino acid sequence at positions 16-27 (SEQ ID NO: 30), the amino acid sequence at positions 37-42 (SEQ ID NO: 31), the amino acid sequence at positions

78-84 (SEQ ID NO: 32) and the amino acid sequence at positions 107-112 (SEQ ID NO: 33) of a basic fibroblast growth factor,

<29> (g) the amino acid sequence at positions 255-275 (SEQ ID NO: 34), the amino acid sequence at positions 475-494 (SEQ ID NO: 35) and the amino acid sequence at positions 551-573 (SEQ ID NO: 36) of dentin sialoprotein,

<30> (h) the amino acid sequence at positions 63-83 (SEQ ID NO: 37), the amino acid sequence at positions 84-103 (SEQ ID NO: 38), the amino acid sequence at positions 104-116 (SEQ ID NO: 39) and the amino acid sequence at positions 121-140 (SEQ ID NO: 40) of a heparin binding EGF-like growth factor,

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<31> (i) the amino acid sequence at positions 326-350 (SEQ ID NO: 41), the amino acid sequence at positions 351-371 (SEQ ID NO: 42), the amino acid sequence at positions 372-400 (SEQ ID NO: 43), the amino acid sequence at positions 401-423 (SEQ ID NO: 44), the amino acid sequence at positions 434-545 (SEQ ID NO: 45), the amino acid sequence at positions 546-651 (SEQ ID NO: 46), the amino acid sequence at positions 1375-1433 (SEQ ID NO: 47), the amino acid sequence at positions 1435-1471 (SEQ ID NO: 48), the amino acid sequence at positions 1475-1514 (SEQ ID NO: 49), the amino acid sequence at positions 1515-1719 (SEQ ID NO: 50), the amino acid sequence at positions 1764-1944 (SEQ ID NO: 51) and the amino acid sequence at positions 2096-2529 (SEQ ID NO: 52) of the cadherin EGF LAG seven-pass G-type receptor 3,

<32> (j) the amino acid sequence at positions 54-159 (SEQ ID NO: 53), the amino acid sequence at positions 160-268 (SEQ ID NO: 54), the amino acid sequence at positions 269-383 (SEQ ID NO: 55), the amino acid sequence at positions 384-486

(SEQ ID NO: 56) and the amino acid sequence at positions 487-612 (SEQ ID NO: 57) of an osteoblast specific cadherin (OB-cadherin).

<33> The N-terminal end of the peptide has an addition of cysteine and two glycines so as to stabilize the structure of the peptide and to facilitate chemical immobilization of the peptide to the barrier membrane.

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<35> As the barrier membrane to be surface-activated by the present invention, all kinds and types of barrier membranes can be used if they are used in the technical field. Pre Preferred examples of these barrier membranes include porous membranes made of polylactic acid, regeneraton membranes made of nanofibers of chitin or chitosan, and film-shaped barrier membranes made of chitin or chitosan. Also, as the implants, titanium implants are preferably used but are not limited thereto. In this respect, the surface of the implants is preferably modified by oxidation and nitrification so as to facilitate the adhesion of the active peptide to the surface.

VERIFICATION OF TRANSLATION

I, BAE, Young Sim of 11th Yeosam Bldg., 648-23, Yeoksam-dong, Gangnam-gu, Seoul, 135-080, Republic of Korea

State that the attached document is a true and accurate translation of Korean Patent Application No. 10-2004-0019010 in Korean_(language of original specification) to the best of my knowledge and belief.

Dated this August 3, 2009

Signature of Translator:

THAT THE